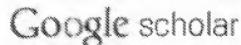


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[\[PDF\]](#) **Pricing multicast communication: A cost-based approach** - ► [psu.edu](#) [PDF]

JC Chuang, MA Sirbu - Telecommunication Systems, 2001 - Springer

... This is consistent with general Internet routing today, where hop-count is the widely used metric for route cost ... Lu is clearly network-specific – it is influenced by topological factors such as the number of nodes and links in the network, average node degree, network diameter ...

Cited by 188 - Related articles - BL Direct - All 13 versions

[\[PDF\]](#) **The trade-offs of multicast trees and algorithms** - ► [kfupm.edu.sa](#) [PDF]

L Wei, D Estrin - In Proceedings of the 1994 international ..., 1994 - eprints.kfupm.edu.sa

... a unidirectional link as a simple measure of the degree of traffic concentration. ... large scale networks, eg limited knowledge of global topology at each network node and need ... vice shortestpaths

2 , distributed linkstateprotocols such as MOSPF can be used to compute shortest ...

Cited by 151 - Related articles - View as HTML - All 3 versions

[\[PDF\]](#) ► **Evaluation of multicast routing algorithms for real-time communication on high- ...**

HF Salama, DS Reeves, Y Viniotis - IEEE Journal on Selected Areas in ..., 1997 - Citeseer

... is approximately the average node degree of current networks. Figure 1 shows an example of a randomly generated ... Each node represented a non-blocking ATM switch, and each link had a small output buffer. ... For the MC sources we used variable bit rate (VBR) video sources. ...

Cited by 306 - Related articles - View as HTML - BL Direct - All 12 versions

[\[PDF\]](#) ► **On the placement of internet instrumentation**

S Jamin, C Jin, Y Jin, D Raz, Y Shavit, L Zhang - IEEE INFOCOM, 2000 - Citeseer

... link costs satisfying the triangle inequality, 3 and an integer K , find a set of K nodes such that the maximum distance between a node on the graph and the nearest center is minimized. We present two algorithms below, each of which can be used to solve both the Number of ...

Cited by 245 - Related articles - View as HTML - BL Direct - All 38 versions

[\[PDF\]](#) **A key-management scheme for distributed sensor networks** - ► [psu.edu](#) [PDF]

L Eschenauer, VD Gligor - Proceedings of the 9th ACM Conference on ..., 2002 - portal.acm.org

... its neighbors in wireless communication range, as long as multi-link paths of shared keys exist among neighbors that can be used to setup ... key exists between two sensor nodes, n be the number of network nodes, and $d = p * (n - 1)$ be the expected degree of a node (ie, the ...

Cited by 1710 - Related articles - All 52 versions

[\[PDF\]](#) ► **A disjoint path selection scheme with shared risk link groups in GMPLS networks**

E Oki, N Matsuura, K Shiomoto, N Yamanaka - IEEE Communications letters, 2002 - comsoc.org

... is used as a parameter to judge whether the binary search method converges. ... For all s, if , all links , where , are also pruned. ... evaluate the WSRLG performance, we use network topologies generated in a random manner under the condition that average node degree is satisfied ...

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[\[PDF\]](#) **A distributed algorithm for delay-constrained unicast routing** - ► [psu.edu](#) [PDF]

HF Salama, DS Reeves, Y Viniotis - IEEE INFOCOM, 1997 - doi.ieeecomputersociety.org

... distance vector at each node to be periodically transmitted to direct neighbors of that node only ... The same procedures used for maintaining the distance vectors can be used for maintaining the cost ... We also assume that the link costs, the link delays, the contents of the cost vectors ...

Cited by 164 - Related articles - BL Direct - All 15 versions

[\[PDF\]](#) ► **Local search genetic algorithm for optimal design of reliable networks**

B Dengiz, F Altiparmak, AE Smith... - IEEE Transactions on Evolutionary ..., 1997 - Citeseer

... **node**. For example, **node** 2 of the right-hand network of Figure 1 has **node degree** = 3. 3.2 INITIAL POPULATION ... Ulman [27], which grows a tree from a randomly chosen **node**. 2. **Links** selected randomly from the co-tree set (the set of **links** which are not yet **used** in the ...
Cited by 131 - Related articles - View as HTML - BL Direct - All 10 versions

[PDF] ► Dimensioning of survivable WDM networks

B Van Caenaghem, W Van Parys, F De Turck, PM ... - IEEE Journal on ..., 1998 - comsoc.org
... In WP networks, this becomes Whether or not a **link** is **used** can be expressed through the following constraints (for VWP as well as for WP networks): An additional constraint has been added for survivability reasons. The **node degree** must be minimal two. ...

Cited by 191 - Related articles - View as HTML - BL Direct - All 7 versions

Bandwidth-delay-constrained least-cost multicast routing based on heuristic ...

W Zhengying, S Bingxin, Z Erdun - Computer communications, 2001 - Elsevier

... The searching process begins at the source s and randomly selects an unvisited **node** at each **node** for the next visit. ... t), t D), its value is 1, or else r(0<r<1). The value of r determines the **degree** of penalty ... The crossover operations **used** in our algorithm are described as follows. ...
Cited by 84 - Related articles - All 2 versions

Topological optimization of a communication network subject to a reliability ... - ► 140.113.39.78 [PDF]

RH Jan, FJ Hwang, ST Chen - 1993 - 140.113.39.78

... The objec- tive is to find the topological layout of **links**, at a minimal **cost**, under the constraint ... A decomposition method, based on branch & bound, is **used** for solving the problem ... to speed-up the procedure, an upper bound on system reliability in terms of **node degrees** is applied ...
Cited by 93 - Related articles - View as HTML - BL Direct - All 6 versions

[PDF] ► Power control and clustering in ad hoc networks

V Kawadia, PR Kumar - IEEE INFOCOM, 2003 - Citeseer

... The leader election, or the cluster set up phase, uses heuristics like **node addresses**, **node degrees**, transmission power, mobility, or more sophisticated **node** weights combining the above ... Cluster-heads can be **used** as base stations as in cellular networks in [20]. ...
Cited by 375 - Related articles - View as HTML - BL Direct - All 36 versions

[PDF] ► Designing communication network topologies using steady-state genetic ...

H Sayoud, K Takahashi, B Vaillant - IEEE Communications Letters, 2001 - comsoc.org

... A Dijkstra-based algorithm is **used** to add back the minimum **cost** **links** that connects the dis- joint components. We also used a depth-first search algorithm to check whether a topology is biconnected, that is any topology that has one or more nodes with **node degree**
Cited by 36 - Related articles - View as HTML - BL Direct - All 4 versions

Search in power-law networks - ► arxiv.org [PDF]

LA Adamic, RM Lukose, AR Puriyan, BA Huberman - Physical review E, 2001 - APS

... the highest **degree node** has been visited, it will be avoided, and a **node** of approximately ... is the most efficient way to do this kind of sequential search, visiting highest **degree** nodes in ...
SIMULATIONS , 22 We **used** simulations of a random network with a power2.1 to validate our ...
Cited by 722 - Related articles - BL Direct - All 30 versions

[PDF] ► The trade-offs of multicast trees and algorithms

L Wei, D Estrin - International Conference on Computer ..., 1994 - Citeseer

... a simple measure of the **degree** of traffic concentration ... the above evaluation criteria, we bear in mind the restrictions of real world large scale networks, eg limited knowledge of global topology at each network **node** and need ... as MOSPF can be **used** to compute shortest path trees9 ...
Cited by 59 - Related articles - View as HTML - All 26 versions

An efficient delay-constrained multicast routing algorithm

Q Sun, H Langendorfer - Journal of High Speed Networks, 1998 - IOS Press

... each network **node** is *2. Most of our experiments were conducted on networks with an average **node degree** of 4 ... Most of our simulation experiments **used** a value of 50 ms for ... the experiments conducted in [15] were only for networks with a random set of **links** connecting nodes ...

Cited by 53 - Related articles - BL Direct - All 2 versions

Cost-effective implementation of multicasting in wavelength-routed networks - ► [psu.edu](#) [PDF]

M Ali, JS Daogun - Journal of Lightwave Technology, 2000 - opticsinfobase.org

... increases. The higher blocking in TaC networks is due to the relatively large number of optical fibers **used** in the multicast trail; thus forcing sessions sharing fiber **links** to use ... 18 shows the average maximum- delay as a function of **node degree** , for different connection types. ...

Cited by 81 - Related articles - BL Direct - All 16 versions

Topology aggregation for directed graphs - ► [kfupm.edu.sa](#) [PDF]

B Awerbuch, Y Shavit - IEEE/ACM Transactions on Networking (TON), 2001 - portal.acm.org

... Obviously, only **links** that belong to some shortest path are **used**, and specifically, **links** that are deleted to ... we pro- duce random graphs according to Waxman's method [10]. In the graph creation process, **links** are added until all nodes reach a **minimum node degree** of two ...

Cited by 87 - Related articles - BL Direct - All 12 versions

[PDF] ► **Honeycomb networks: Topological properties and communication algorithms**

I Stojmenovic - IEEE Transactions on Parallel and Distributed Systems, 1997 - Citeseer

... to send the same message to all or some of its neighbors at once) is **used**, then the ... each **node** on the path applies "0" to reduce the information forwarded to the next node to a ... N ETWORK Honeycomb torus network can be obtained by joining pairs of nodes of **degree** two (ie ...

Cited by 128 - Related articles - View as HTML - BL Direct - All 9 versions

On the minimum node degree and connectivity of a wireless multihop network - ► [iitb.ac.in](#) [PDF]

C Bettstetter - Proceedings of the 3rd ACM international symposium ..., 2002 - portal.acm.org

... intions of graph theory and define the nomenclature **used** in this paper. 3.1 Node Degree The **degree** of a **node u**, denoted as $d(u)$, is the number of neighbors of **node u**, ie, its number of **links**.

A **node** of **degree** $d = 0$ is isolated, ie, it has no neighbors (see Fig. ...

Cited by 428 - Related articles - All 9 versions

Highly dynamic destination-sequenced distance-vector routing (DSDV) for mobile ... - ► [psu.edu](#) [PDF]

CE Perkins, P Bhagwat - ACM SIGCOMM Computer Communication ..., 1994 - portal.acm.org

... method. Each **node** maintains a view of the network topology with a **cost** for each **link**. To keep these views consistent, each **node** periodical y broadcasts the **link costs** of its outgoing **links** to all other nodes using a protocol such as flooding. As a **node** receives this in- ...

Cited by 4333 - Related articles - BL Direct - All 74 versions

Restoration strategies and spare capacity requirements in self-healing ATM ... - ► [mcgill.ca](#) [PDF]

Y Xiong, LG Mason - IEEE/ACM Transactions on Networking (TON), 1999 - portal.acm.org

... 2. Very often, the connectivity of a network is measured by the network average **node degree** which is equal to the average number of **links** at each **node**. ... 3(20, 30) with is **used** as an example, which is a subnetwork of network 3 and consists of nodes 0-19. Fig. ...

Cited by 213 - Related articles - BL Direct - All 16 versions

[PDF] ► **Survivable routing of logical topologies in WDM networks**

E Modiano, A Narula-Tam - IEEE INFOCOM, 2001 - Citeseer

... shown in figure 2. We attempted to embed random logical topologies of **degree** 3, 4, and 5, where we define a logical topology of **degree** k to be logical topology where every **node** has **degree** k. For each, we generated 100 random logical topologies and **used** the ILP to ...

Cited by 98 - Related articles - View as HTML - BL Direct - All 11 versions

[PDF] ► **Energy efficient communications in ad hoc networks using directional antennas**

A Spyropoulos, CS Raghavendra - IEEE INFOCOM, 2002 - Citeseer

... techniques that have been suggested to save power, some of the most commonly **used** and successful ... That is, all nodes have a 360 o **degree** coverage angle and do not need to ... Some recent papers [1], [2] suggest the use of multiple directional antennas per **node** (or multiple ...

Cited by 135 - Related articles - View as HTML - BL Direct - All 20 versions

[PDF] ► **Network awareness and failure resilience in self-organising overlay networks**

L Massoulie, AM Kermarrec, A Ganesh - PROCEEDINGS OF THE ..., 2003 - Citeseer
 ... The same mechanism can be used, at virtually no extra computation or communication cost, to balance node degrees. Balancing degrees not only helps to balance the load, but more importantly improves the resilience of the system to link and node failures. ...
 Cited by 59 - Related articles - View as HTML - BL Direct - All 11 versions

[PDF] ► Multicast routing and bandwidth dimensioning in overlay networks

SY Shi, JS Turner - IEEE Journal on Selected Areas in Communications, 2002 - Citeseer
 ... It starts by determining the ideal degree of each node in the multicast session, with respect to the objective ... minimizing the diameter, without regard to degree constraints. ... the 50 largest metropolitan areas in US [25] and the geographic distances between cities was used as the ...
 Cited by 101 - Related articles - View as HTML - BL Direct - All 11 versions

[PDF] ► Host multicast: A framework for delivering multicast to end users

B Zhang, S Jamin, L Zhang - IEEE INFOCOM, 2002 - Citeseer
 ... These members can be cached and used for partition recovery. ... Results presented here are based on simulations on a network consisting of 1000 nodes, representing routers, and 3300 links. ... 9). The maximum node degree constraint when running HMTP is set to eight. ...
 Cited by 390 - Related articles - View as HTML - BL Direct - All 31 versions

[PDF] ► A comparison of multicast trees and algorithms

L Wei, D Estrin - Proc. of IEEE Infocom, 1994 - Citeseer
 ... transmissions, SPT-based multicasts already provides substantial savings in link cost, and it ... with relatively few globally-active multicast groups, SPT's are satisfactory. The bandwidth is used for real ... simplest 3 reductions are: (1) For non-member vertex k whose node degree is 1 ...
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[PDF] ► GMPLS-based photonic multilayer router(Hikari router) architecture: an overview of ...

K Sato, N Yamanaka, Y Takigawa, M Koga, S ... - IEEE Communications ..., 2002 - lcs.poli.usp.br
 ... In BXCQ, the addition/elimination of links is iterated to solve a topological optimization problem with quality-of-service constraints, such as delay and blocking probability. ... Wavelength bandwidth is set to 2.5Gb/s. We used the metric of the average node degree, D, to ...
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[PDF] ► Survivable lightpath routing: a new approach to the design of WDM-based ...

E Modiano, A Narula-Tam - IEEE Journal on Selected Areas in ..., 2002 - Citeseer
 ... 3. We attempted to embed random bi-directional logical topologies of degree 3, 4, and 5, where we define a logical topology of degree k to be logical topology where every node has degree k. ... topologies and used the ILP to find optimal survivable routing on the NSFNET. ...
 Cited by 109 - Related articles - View as HTML - All 10 versions

Search space reduction in QoS routing - ► psu.edu [PDF]

L Guo, I Matta - Computer Networks, 2003 - Elsevier
 ... with least cost, this function is no longer suitable since it treats all link measures equally ... On the other hand, with our multiplicative function used in our DCCR algorithm, paths that are ... 5. Path distribution in cost-delay plane, network size=4000, node degree 4, negative correlation ...
 Cited by 75 - Related articles - BL Direct - All 12 versions

A distributed algorithm for delay-constrained unicast routing - ► psu.edu [PDF]

DS Reeves, HF Salama - IEEE/ACM Transactions on Networking (TON), 2000 - portal.acm.org
 ... vector at each node to be periodically transmitted to direct neighbors of that node only ... The same procedures used for maintaining the distance vectors can be used for maintaining the cost vectors ...
 We also assume that the link costs, the link delays, the contents of the cost vectors ...
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Minimum-energy broadcast in all-wireless networks: NP-completeness and ... - ► psu.edu [PDF]

M Çagalj, JP Hubaux, C Enz - Proceedings of the 8th annual international ..., 2002 - portal.acm.org
 ... model and then, based on it we develop a graph model, which will be used to assess ... approximation ratio better than $O(\log d)$, where d represents the maximum node degree in a ...

However, in metric space **links** and their respective **costs** are dictated by the distances between ...

Cited by 320 - Related articles - All 33 versions

Routing through networks with hierarchical topology aggregation - ► kfupm.edu.sa [PDF]

B Awerbuch, Y Du, B Khan, Y Shavit - Journal of High Speed ... 1998 - eprints.kfupm.edu.sa

... of a **node** (external links not counted) to exceed four are rejected by the random process ... in one case (subnetword 002 in figure 4), the algorithm failed to increase the degree of one ... the staged ring topology), when a constant **link cost** function (ie, min-hop routing) is used instead of ...

Cited by 50 - Related articles - View as HTML - Bl Direct - All 6 versions

On the reduction of broadcast redundancy in mobile ad hoc networks

W Peng, XC Lu - Proceedings of the 1st ACM international symposium ... 2000 - portal.acm.org

... where $d(u)$ is the **degree** of node u , $d_m(u)$ is the maximum **degree** of the neighbors ... Given a connected undirected graph $G=(V, E)$, each **node** except the broadcast source receives at least ... The physical and data link layer model is the same one used in previous works [6]. The ...

Cited by 377 - Related articles - All 2 versions

QoS based routing algorithm in integrated services packet networks - ► ieee-icnp.org [PDF]

C Parnavali, G Chakraborty, N Shiratori - Journal of High Speed Networks, 1998 - IOS Press

... 6. Simulation results The communication networks used in our experiments are optical fiber, full duplex and directed, with homogeneous link capacity bandwidth of 155.52 Mbps (OC3). ... Nodes of all these networks were so connected that the **degree** of each **node** is at least 2 ...

Cited by 81 - Related articles - Bl Direct - All 7 versions

Evaluating the impact of stale link state on quality-of-service routing - ► psu.edu [PDF]

A Shaikh, J Rexford, KG Shin - IEEE/ACM Transactions on Networking (... 2001 - portal.acm.org

... very important parameters like size and **node degree** in a controlled fashion. ... MCI and random topologies, though in Section IV we use a set of regular graphs with different **degrees** of connectivity ... Table I lists the pertinent characteristics of the topologies used in our experiments ...

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Quality of service based routing: A performance perspective - ► psu.edu [PDF]

G Apostolopoulos, R Guérin, S Kamat, SK ... - ACM SIGCOMM ... 1998 - portal.acm.org

... Specifically, whenever a trigger is activated, the **node's** update message can cover only the specific link involved or all of the **node's** links. The trade-off is be- ... Unfortunately, the **degree** of inaccuracy in this ... In addition, the topology of G will be used in Section 5 to evaluate the ...

Cited by 396 - Related articles - Bl Direct - All 25 versions

[PDF] ► A review of routing and wavelength assignment approaches for wavelength-routed ...

H Zang, JP Jus, B Mukherjee - Optical Networks Magazine, 2000 - Citeseer

... Fixed-alternate routing provides simplicity of control for setting up and tearing down lightpaths, and it may also be used to provide some degree of fault tolerance upon ... 0 1 2 3 4 5 Figure 3: Primary (solid) and alternate (dashed) routes from Node 0 to Node 2. 0 1 2 3 4 5 ...

Cited by 899 - Related articles - View as HTML - All 19 versions

[PDF] ► Preferred link based delay-constrained least-cost routing in wide area networks

R Sriram, G Manimaran, CSR Murthy - Computer Communications, 1998 - Citeseer

... The maximum number of entries per row is denoted by k . Obviously k is upper- bounded by the maximum **degree** of any ... a call setup packet P belonging to the call-request $R \frac{1}{4} (id, s, d, B, D)$ arrive at **node** v . For ... A similar idea of residual delay has also been used by Kompella et al ...

Cited by 39 - Related articles - View as HTML - All 6 versions

A routing protocol for packet radio networks - ► psu.edu [PDF]

S Murthy ... - Proceedings of the 1st annual international conference ... 1995 - portal.acm.org

... The **cost** of the link from i to t (i, k) is denoted by $b_{i,t}$ This type of up- date message is used as a "hello message" from a **node** to allow its neighbors to know that they maintain connectivity. even if no user messages or routing-table updates are exchanged. ...

Cited by 171 - Related articles - All 22 versions

Efficient qos routing - ► psu.edu [PDF]

S Siachalou, L Georgiadis - Computer Networks, 2003 - Elsevier

... Although pseudopolynomial, tests with a wide variety of networks, **link costs** and **link constraints**, show that the proposed algorithms have fairly satisfactory performance and can be used in practical ... Let $G=(N,L)$ be a graph with **node** set N and **link** set L . A **link** with origin ...

Cited by 40 - Related articles - Bl Direct - All 19 versions

[PDF] ► Hierarchical routing using link vectors

J Behrens, JJ Garcia-Luna-Aceves - IEEE INFOCOM, 1998 - Citeseer

... Although the new hierarchical routing algorithm can be used with overlapping clusters with only minor modifications ... An underlying protocol assures that A **node** detects within finite amount of time the ... All messages transmitted over an operational **link** are received correctly and in ...

Cited by 47 - Related articles - View as HTML - Bl Direct - All 14 versions

Finding disjoint paths in networks

D Sidiropoulos, R Nair, S Abdallah - ACM SIGCOMM Computer Communication ..., 1991 - portal.acm.org

... ogy. Another scheme [2] finds multiple paths that are initial-link-disjoint (disjoint in the first link). The method of link-disjoint augmentation [3, 4] was used in [5] to construct a pair of disjoint paths of minimum total cost from every **node** to a destination. ...

Cited by 97 - Related articles - All 2 versions

[PDF] ► On the placement of web server replicas

L Qiu, VN Padmanabhan, GM Voelker - IEEE INFOCOM, 2001 - Citeseer

... of the path between two nodes (assuming there is a **cost** associated with the **links** on the ... a super-optimal bound from each value of U . The maximum of the three is used as the ... and 300-node trees, and we set the maximum distance to 10 and the maximum **node degree** to 10 ...

Cited by 476 - Related articles - View as HTML - Bl Direct - All 40 versions

An efficient routing protocol for wireless networks - ► iitb.ac.in [PDF]

S Murthy, JJ Garcia-Luna-Aceves - Mobile Networks and Applications, 1996 - Springer

... | A marker (tag) used to update routing table; it specifies whether the entry corresponds to a simple path (tag = correct), a loop (tag = error) or a destination that has not been marked (tag = null). The **link-cost** table of node i lists the **cost** of relaying information through each ...

Cited by 822 - Related articles - All 6 versions

An iterative algorithm for delay-constrained minimum-cost multicasting - ► psu.edu [PDF]

M Parsa, Q Zhu, JJ Garcia-Luna-Aceves - IEEE/ACM Transactions on ..., 1998 - portal.acm.org

... In our description and implementation of BSMA we have used a shortest-path algorithm to perform path switching. ... total time complexity of BSMA is In practice we are more interested in degree-bounded networks in which the maximum degree of every **node** is upper ...

Cited by 140 - Related articles - Bl Direct - All 16 versions

[PDF] ► Multicast routing with end-to-end delay and delay variation constraints

GN Rouskas, I Baldine - IEEE Journal on Selected Areas in Communications, 1997 - Citeseer

... Tree is then a feasible tree for the new set and can be used without any change other ... and the delay along each **link** was set to the propagation delay of light along the **link**. ... 4-6 correspond to networks with average **node degree** equal to 2.5 and multicast groups of sizes equal to ...

Cited by 263 - Related articles - View as HTML - Bl Direct - All 13 versions

[PDF] ► Methods for designing communications networks with certain two-connected ...

CL Morimoto, DF Shallcross - Operations Research, 1989 - jstor.org

... This approach has been used successfully for a number of problems including the traveling salesman problem and the graph partitioning problem; see Papadimitriou and Steiglitz (1982, Chapter 19) for a general discussion of local ... In all cases, the **degree** of **node** u is ...

Cited by 143 - Related articles - All 4 versions

[PDF] ► Cache-and-relay streaming media delivery for asynchronous clients

S Jin, A Bestavros - International workshop on networked group ..., 2002 - Citeseer

... 4.1 Networks Used in Our Simulations In our simulations, four synthetic and real networks were

used ... A random power-law **degree** network with 120,037 vertices generated using the model in [2]—namely, the probability of having **node degree** larger than d is proportional ...

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